2016

M.Sc.

2nd Semester Examination

REMOTE SENSING AND GIS

PAPER—RSG–202

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Use Separate answer book for <u>*each Group.*</u>

Group–A

(GIS)

[Marks : 20]

Answer any *two* questions.   2×10

1. What do you mean by Thermal inertia and apparent Thermal inertia ? Define Kinetic and radiant temperature.

What will be the dominant wavelength for forest fire of 800K ? State the Law of thermodynamics that helped in computing dominant emissive wavelength for the forest fire.   3+3+4

2. Briefly discuss the 'diurnal effect' upon the interpretation of thermal imagery. What is Kirchhoff radiation Law ? Sun's photosphere is at a temperature of 6000°K, whereas a luminescent lamp's filament glows at 2000°K. Compare (find out the ratio) the radiant exitance of both the objects.   3+2+5

3. Explain parameters influencing the Radar Return Signal. Discuss on the advantages and disadvantages of InSAR and Radargrammetry for DEM generation.   8+2

4. Write down the fundamental differences in the nature of relief of displacement of aerial photograph and RADAR image ? Describe 'Fore-shortening', 'Layover' and 'shadows' of a RADAR image. What is the relation between 'Angular beam width' of a RADAR signal with the 'Antenna length' ? How narrower beam width can be achieved by synthesizing a virtual antenna length ?   2+3+2+3

Group–B

(Data Storage)

[Marks : 20]

Answer any *two* questions.   2×10

1. Briefly discuss the importance of hyperspectral remote sensing inmapping earth surface features.
   What are the differences between hyperspectral and multispectral remote sensing?
   What is PPI?   3+4+3

2. What do you mean by endmember?
   Explain the concept of minimum noise fraction and state the interrelationship between eigen value and noise content in MNF bands.
   Which parameters are being considered during FLAASH atmospheric correction?
   Name two airborne and spaceborne hyperspectral sensor.   2+3+3+2

3. Explain the principle of LIDAR remote sensing through proper illustration.
   How object height is determined from the travel time of LIDAR pulse?

Estimate the diameter of instantaneous laser footprint where, flying height = 900m, scanning angle is 18° and beam divergence is 0.8 mrad. 4+3+3

4. What are the differences between SAR and LIDAR. Can LIDAR and RADAR image synergy be used to have a better estimation of aboveground biomass ? Explain. 5+5

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